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ABSTRACT

A study analyzed the component parts of existing formulae to distribute federal vocational monies to secondary level programs in Missouri. Among the areas examined were the relative weight of the factors influencing distribution of funds and the extent to which each factor contributes to the final array depicting the total distribution of federal funds to school districts in Missouri. The first task performed was a simple scatter plot of the major components of the four factors in the formula, namely, district tax levies, average income, number of Aid to Families with Dependent Children (AFDC) recipients in the school districts, and the rate of unemployment by counties where federal vocational funds are being expended. Next, a stepwise regression analysis was run to determine which variables account for the greatest variance in the distribution formula for federal funds. Researchers found that the variables included in the formula are not distributed in a normal fashion. While the law requires that two factors, the relative ability to pay and the concentration of low income families, must receive a high priority in the distribution of federal funds, the Missouri formula does not appear to pay enough attention to a family's relative ability to pay. (MN)

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ED226181

THE DISTRIBUTION OF FEDERAL FUNDS FOR VOCATIONAL EDUCATION IN MISSOURI AND AN ANALYSIS OF HOW IT IS ACCOMPLISHED

A STUDY CONDUCTED BY THE MISSOURI ADVISORY COUNCIL ON VOCATIONAL EDUCATION UNDER THE DIRECTION OF THE RESEARCH COORDINATING UNIT WITHIN THE CAREER AND ADULT DIVISION OF THE DEPARTMENT OF ELEMENTARY AND SECONDARY EDUCATION.

The Project Director was Gordon R. Kutscher, Executive Director of the Council. (1982)

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The Missouri Advisory Council on Vocational Education was first formed under P.L. 90-576. It is now operating under P.L. 94-482.

The main functions of the Council are to advise the State Board of Education on the development of the five-year and annual program plan for vocational education and the accountability report which the Board is required to submit. They are also charged with Advising the State Board on policy matters arising out of the administration of programs. A third function is the evaluation of the programs, services and activities of vocational education and the dissemination of the results of that evaluation. The Council is required to assist the State Board in developing plans for State Board evaluations. The Council must report annually to the United States Commissioner of Education and to the National Advisory Council on Vocational Education on their evaluation results. The State Board of Education may include any remarks they deem appropriate as an accompaniment to this report. The Advisory Council on Vocational Education must identify the vocational education and the employment and training needs of the State, and assess the extent to which these needs are being met in a consistent, integrated and coordinated way. Another function of the Council is to comment on the report of the State Employment and Training Council. The State Council is also to provide technical assistance to local advisory councils on vocational education as requested.

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ABSTRACT

In reviewing P.L. 94-482, the Federal Register and the Missouri State Plan for Vocational Education for the past few years since the law has been in effect and the change that occurred in the formula after the Management Evaluation Review for Compliance and Quality (MERC-Q), it was deemed a worthwhile project to devote additional time and study to further analyze the component parts of the formulae to distribute federal vocational monies in Missouri.

This study is restricted to a determination of the type of distribution the various factors create, i.e., are the factors normally distributed and secondly, how much is each factor contributing to the final array depicting the total distribution of federal funds to school districts in Missouri. The study was limited to only secondary level program distribution since it was felt that this would prove illustrative of the other formulae not included. The first task performed, then, was a simple scatter plot of each of the major components of the four factors in the formula, namely, district tax levies, average income, number of AFDC recipients in the school districts, and the rate of unemployment by counties where federal vocational funds are being expended. In addition to this mechanism, it was determined that a computer plot of the variables employed in the regression analysis planned for this project could easily be included along with a computation for skewness and kurtosis. (See Appendix) Of course, it is noted that a distribution is said to be "skewed" when the mean and median fall at different points in the distribution. Two variables were negatively skewed while seventeen were positively skewed. Kurtosis refers to the "peakedness" or "flatness" of a frequency distribution as compared with the normal. In all cases except two,

the distributions are platykurtic, while in the other instances the variables are leptokurtic. This is interpreted to mean no variable is near a normal distribution.

A stepwise regression analysis was run to determine which variables account for the greatest variance in the distribution formula for federal funds. It was found that one variable (AFDC) would account for 97.4% of the variance in funds distributed when expenditures are excluded. Ninety-seven and five tenths of the variation in distribution is accounted for when the two variables, AFDC and State Reimbursements are accounted, again excluding expenditures.

Conclusions reached include the following: The variables included in the formula are not distributed in a normal fashion. Two standard scores are calculated. This would not be necessary. Since most of the variance is accounted for by utilizing one or two variables, the question arises as to the propriety of the extra work involved in collection of data and the calculation of the distribution. Indeed, when seven variables are included in the calculation, we can only account for an additional .6 of 1%. This would make it appear that we need only use 2 variables to determine that distribution of federal funds for vocational programs. Realizing the requirement of federal law, it is still hoped that a more simple formula could be developed and implemented.

The study determines that a simplified formula or scheme for the distribrution of federal vocational funds is in order, but that it will need approval from the federal level. It appears that a simplified distribution can be effected which will satisfy federal mandates and still allow local districts and agencies to determine (within close proximity) the amount of federal funding they may expect for their vocational programming.

PREFACE

Federal law calls for the distribution of federal vocational monies according to specified guidelines which causes states to develop recipies or formulas for this procedure. The State of Missouri had a formula in place for sometime but this was adjudged unsatisfactory when the Management Evaluation Review for Compliance and Quality (MERC-Q) report was received back in 1980. This critique, then, led to a new formula or really formulae to be adopted. These were accepted by the Department of Education as satisfying the intent and the letter of the law.

The State Advisory Council had begun a study of the formula, distribution process, etc. prior to the MERC-Q. However, the interest of the group was intensified after reading the recommendations of the Federal Department of Education. Hence, this study and review was implemented to seek answers and make suggestions about this very complex issue. The Department of Elementary and Secondary Education has been very helpful in providing information and advice in working through this procedure. The Council is of the opinion that a "formula" or method of distribution could become a more simplified procedure if additional study were devoted to the issue. A limited number of copies of this study will be available from the State Council Office.

"The activity which is the subject of this report was supported in whole or in part by funds from the Department of Elementary and Secondary Education, Division of Career and Adult Education. However, the opinions expressed herein do not necessarily reflect the position or policies of the Missouri Department of Elementary and Secondary Education or the Division of Career and Adult Education, and no official endorsement should be inferred."

CHAPTER I

INTRODUCTION

On October 12, 1976, the Congress of the United States enacted the "Education Amendments of 1976." This act amended the Vocational Education Act of 1963. The Act of 1963 represented a dramatic departure from previous vocational education legislation.[1] All previous acts funded and administered by the Department of Health, Education and Welfare had required that Federal funds appropriated for vocational education be matched by State and/or local funds. The major vocational education acts, prior to 1963, had required matching by instructional program. The Federal funds expended for the programs of agricultural education, trades and industrial education, distributive education, and home economics education had to be matched by State and/or local funds expended for these programs. The Vocational Education Act of 1963 identified six matching purposes, but no mention was made of any instructional program except the statement that training for business and office occupations was eligible for funding through this act. The six matching purposes were:

Vocational education for persons attending high school.

Vocational education for persons who had completed or left high school and were available for full-time study in preparation for entering the labor market.

Vocational education for persons who had already entered the labor market and who needed training or retraining to achieve stability or advancement in employment.

Vocational education for persons with academic, socioeconomic, or other handicaps that prevented them from succeeding in the regular vocational education programs.

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1. Public Law 88-210, 88th Congress.

Ancillary services to assure quality in vocational education programs.

Construction of area vocational education facilities.

Funds expended for each of these six purposes were to be matched by State and/or local funds independent of any of the other purposes.

Aside from the dropping of any designation of instructional program, there were two equally significant changes. One was that states could not use the Federal funds allotted by this act to replace or supplant state of local funds. However, states were allowed to include state and local expenditures on a state-wide basis within each of the six categories. Local schools were not required to maintain their effort of expenditures for vocational education. The other change was that states were required to set forth policies and procedures to be used as criteria in allocating Federal funds to the local educational agencies in the State. These policies and procedures were to be designed to insure that due consideration was given to the following:

(1) the vocational education needs of all persons of all age groups in all communities of the State;

(2) the results of periodic evaluation of state and local vocational education programs and services in light of current and projected manpower needs and job opportunities; and

(3) the need for maintaining, extending and improving existing programs and developing new programs of vocational education.

States had traditionally used one of two methods of distributing vocational education funds to local educational agencies. The most common approach was to reimburse all programs within a category a standard percentage of the local agencies' reimbursable expenditures for approved vocational programs. The other method was to reimburse a specific dollar

amount to each school for a program or for a program unit. In neither case was any consideration given to differences in the vocational education needs of different persons, different schools, or different geographic areas of the State. differences in the costs of programs were not considered. Nor was any consideration given to differences in the manpower needs of any particular areas of the State or the needs of any occupations. The writers of the Vocational Education Act of 1963 obviously intended that these practices be changed. However, states continued to use these same methods in distributing funds and gave only superficial recognition to the employment of any criteria based on the consideration of needs.

The vocational Education Amendments of 1968, like its predecessor, the Act of 1963, did not specify educational programs. It retained the six purposes of the 1963 Act and added: "...vocational guidance and counseling designed to aid persons.,.in the selection of, and preparation for, employment in all vocational areas."[2]

The Act also defined handicapped persons with more specificity. Handicapped persons were now grouped into two classifications: "...persons who have academic, socioeconomic, or other handicaps that prevent them from succeeding in the regular vocational education program."[3]

Where the Act of 1963 stated that states must give due consideration to a variety of vocational education needs but did not put any teeth in the bill to insure that this was actually done, the Amendments of 1968 very explicitly expected the funds to be distributed on the basis of need. The amendments of 1968 state,

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2. Public Law 90-576, 90th Congress, H.R. 18366, October 16, 1968, p. 9.

3. Ibid.

"...funds made available under this title will not be allocated to local educational agencies in a manner, such as the matching of local expenditures at a percentage ratio uniform throught the State, which fails to take into consideration the (following) criteria..."[4]

(1) due consideration will be given to the results of periodic evaluations of State and local vocational education programs, services, and activities in the light of information regarding current and projected manpower needs and job opportunities, particularly new and emerging needs and opportunities on the local, State, and National levels,

(2) due consideration will be given to the relative vocational education needs of all population groups in all geographic areas and communities in the State, particularly persons with academic, socioeconomic, mental, and physical handicaps that prevent them from succeeding in regular vocational education programs,

(3) due consideration will be given to the relative ability of particular local educational agencies within the State, particularly those in economically depressed areas and those with high rates of unemployment, to provide the resources necessary to meet the vocational education needs in the areas of communities served by such agencies,

(4) due consideration will be given to the cost of the programs, services, and activities provided by local educational agencies which is in excess of the cost which may be normally attributed to the cost of education in such local educational agencies,[5]

Other significant requirements of this act were:

(1) At least one fourth of each state's allotment of funds which is in excess of its base allotment may be used only for vocational education for persons with academic, socioeconomic or other handicaps. The amount used for this purpose may not be less than 15 percent of the state's total allotment of funds.

(2) At least one fourth of each state's allotment of funds which is in excess of its base allotment may be used only for vocational education for persons who have completed or left high school and who are available for study in preparation for entering the labor market. The amount used for this purpose may not be less than 15 percent of the state's total allotment of funds.

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4. Ibid, p. 12.
5. Ibid, pp. 11-12.

(3) At least ten percent of each state's allotment of funds shall be used only for vocational education for handicapped persons.

(4) Each state must develop a long range program plan for vocational education which has been prepared in consultation with the advisory council and extends for not more than five years and not less than three. The plan must describe the present and projected vocational education needs of the potential students in the state.

(5) Each state must also develop an annual plan in consultation with the advisory council. This plan must describe the content of and allocation of Federal and state vocational education funds to programs, services, and activities to be carried out under the state plan during the year for which Federal funds are sought.

(6) Maintainance of financial effort is now extended to local educational agencies as well as to states as a whole. Federal funds for vocational education cannot be used to replace expenditures of any local agency whether the expenditures are of state or local funds.

Few changes were made in the purposes of Federal vocational legislation when the Education Amendments of 1976[6] were passed. However, the methods used to support and promote these purposes were significantly changed. Two of the most important dealt with planning and funding requirements! This paper will address the funding mechanism and what, if any, effects the 1976 legislation had on the distribution of vocational education monies in Missouri.

Before we take a look at Missouri, it would be well to consider some congressional findings which brought about or at least strongly influenced the '76 amendments.

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6. Public Law 94-482, Part A and B.

The General Accounting Office had reported to Congress[7] that Federal funds were being used to provide general support for local vocational programs. This would then be interpreted to mean that Federal funds were not going to areas of highest need as intended by Congress.[8] It appeared that VEA dollars were generally not providing support for new program development,[9] and when employment data were studied, it appeared that course enrollments did not, on the whole, correspond to job availability, and changing manpower needs often were not reflected in changing programs.[10]

While this paper will not deal with the topic directly, it should be noted that both the House and the Senate had evidence presented, prior to the passage of the 1976 amendments, that indicated sex bias and sex stereotyping was being practiced in the vocational curriculum, counseling, and the attitudes of vocational teachers.[11]

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7. U.S. General Accounting Office, What is the Role of the Federal Assistance for Vocational Education? Report of the Comptroller General to Congress (Washington, D.C.: U.S. Government Printing Office, 1974).

8. U.S. Congress, House, Committee on Education and Labor, the Vocational Education and National Institute of Education Amendments of 1976: Report to Accompany H.R. 12835, House Report No. 94-1085, 94th Cong., 2nd sess., 1976, p. 14.

9. Ibid., pp. 68-71.

10. D.W. Drewes and D.C. Katz, Manpower Data and Vocational Education: A National Study of Availability and Use (Raleigh, N.C.: North Carolina State University; Center for Occupational Education, 1975); p. 19.

11. House Report, op. cit., p. 12.

The 1976 Amendments are divided into two parts for funding: Part A, State Vocational Education Programs, and Part B, National Programs. Part B Funds, which amounted to $10 million in FY'80, support the National Administration of Vocational Education, the Vocational Education Data System and Programs of National Significance, also called discretionary programs. Discretionary funds are authorized to be awarded directly by the U.S. Department of Education to state and local educational agencies, postsecondary schools, and other profit and non-profit agencies and organizations through grants and contracts for research and demonstration projects for the improvement of vocational education and for bilingual vocational training; to Indian tribes; to vocational educators for leadership development awards and fellowships; to rural and urban school systems for emergency assistance in remodeling vocational education facilities, and to Ohio State University for the National Center for Research in Vocational Education.

This paper is primarily concerned with the distribution Missouri effects under Part A relating to state administration and four state grant programs -- Basic Grants, Program Improvement and Supportive Services, Special Programs for the Disadvantaged, and Consumer and Homemaking Education.

State grants are distributed to state boards according to a formula based on the State's total population and its population in certain age groups. (Thus, they are often called "formula grants.") States redistribute Federal funds to local educational agencies (LEAs, which include school boards and the agencies which administer community colleges and area vocational schools) on the basis of applications submitted to the State. The 1976 Amendments require the states to give priority to

applicants from economically depressed areas and areas with high rates of unemployment. The State must base its distribution of funds to local educational agencies on the relative concentration of low-income persons in the service area and on the relative ability of the agency to meet the needs of those persons, compared to other LEAs in the State. In spite of these priorities, most LEAs get some Federal funds.

The VEA further emphasizes services to low-income persons by requiring that 20 percent of the State's Basic Grant and Program Improvement and Supportive Services funds be used to pay the "excess (additional) cost" of educating disadvantaged persons and students with limited English-speaking ability. An additional 10 percent of the funds from these two programs must be set aside to pay the "excess cost" of educating mentally and physically handicapped students.

Although at least 15 percent of Basic Grant and Program Improvement funds must be allotted for postsecondary and adult vocational education programs, most Federal funds are still spent on vocational education for secondary school students.

The 1976 Vocational Education amendments originally limited the amount of Federal money that could be spent for State and local administration, but State officials complained they could not maintain their administrative activities and staffs if Federal support were reduced. As a result, Congress passed technical amendments in 1977 which removed most restrictions on spending for State and local administration.

CHAPTER II
BACKGROUND

A. FEDERAL ADMINISTRATION

The regulations[12] require that every state vocational education program or activity supported completely or in part by Federal funds, or by state and local funds used to match Federal funds, comply with Federal requirements. The General Education Provisions Act, the Federal law which governs most federally funded education programs, provides that the Department of Education must terminate funds to any recipient of Federal money which fails "to comply substantially with terms to which such recipient has agreed in order to receive such funds."

In addition, all federal funds from all sources can be withheld from an educational agency which is found out of compliance with Title IX of the 1972 Education Amendments, prohibiting discrimination on the basis of sex; Title VI of the 1964 Civil Rights Act, prohibiting discrimination on the basis of race, color or national origin; or Section 504 of the 1973 Rehabilitation Act, prohibiting discrimination on the basis of handicap.

When they were enacted, the 1976 Vocational Education Amendments were administered by the Bureau of Occupational and Adult Education (BOAE) in the Office of Education of the Department of Health, Education and Welfare. The U.S. Commissioner of Education had final authority over most decisions of the Bureau, including approval of state plans. In October, 1979, President Jimmy Carter signed a bill creating a cabinet-level Department of Education with an Assistant Secretary for Vocational and Adult Education overseeing the administration and enforcement of the Vocational Education Act. BOAE became the Office of Vocational and Adult Education (OVAE).

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12. Federal Register, Monday, October 3, 1977, Part VI.

OVAE must make specific findings, in writing, that the state plans comply with the law. VEA Section 107 requires each state to submit a five-year plan, beginning on July 1, 1977, and every fifth fiscal year thereafter, to the Office of Education. In general, the five-year plan should include an assessment of current and future needs for job skills and the goals which the state will set to meet these needs. It should show how Federal, State and local funds will be used for each fiscal year of the plan.

Pursuant to VEA Section 108, a state must submit an annual program plan to the Office of Education each year by July 1. It sets forth provisions for the forthcoming year. In general, it should include any updating of the five-year plan.

B. STATUTORY DIRECTIVES FOR FUND DISTRIBUTION.

The State Basic Grant Program is the largest category of Federal vocational education support (approximately 72 percent of the total VEA appropriation). Subpart 2 establishes 14 areas in which states may spend Federal money, including local and state administration. Most decisions about how they will use Federal funds are left to the states. The exceptions include provisions that:

(1) At least $50,000 from Subpart 2 funds must be spent on the salary and activities of at least one person hired to work full time to assist the state in eliminating sex discrimination and sex stereotyping in all its vocational education programs.

(2) The state must spend the amount of funds it determines is necessry for special programs and placement services for displaced homemakers and other special groups. "The state is required to assess the needs of men and women in these categories and to provide them with organized educational programs to prepare them for employment, with special courses on how to seek employment, and with placement services."

The state may expend Basic Grant funds on the following programs when it includes them in its state plan:

Basic Grant funds may be used for Vocational Education Programs, which include vocational classroom and shop instruction and field work, remedial programs, and the activities of student vocational organizations which are an integral part of vocational instruction. States may also contract with profit or non-profit vocational training institutions for services which meet the requirements of the Federal Regulations and the State Plan.

Recipients of VEA funds may provide for instruction of apprentices who are employed to learn skilled trades if the sponsor provides equal access to both sexes. Federal funds may be used to pay vocational education students who are enrolled in work-study programs in school systems with high numbers of dropouts or unemployed youth to enable them to remain in school. Work-study students may work up to 20 hours a week either at school or in another public or private non-profit agency or institution.

Cooperative vocational education programs employ students in jobs related to their occupational training. As with work-study programs, priority for funding cooperative programs must be given to local educational agencies with high rates of dropouts or unemployed youths.

To be eligible for Federal funding for cooperative programs, vocational schools must enter into written agreements with public or private employers stipulating that the school will furnish students academic and vocational instruction while the employer provides related work experience. States must evaluate cooperative programs "continously," including following up students who have completed or left programs, and must make certain that student employment is in conformity with Federal, State and local employment laws and does not result in student exploitation.

Industrial arts courses (sometimes called prevocational courses) may be funded if "they are designed to meet the purposes of this Act (including the elimination of sex stereotyping)." Industrial arts courses are primarily used to introduce students to industry and technology and their component skills, including the use of tools and machines.

Basic Grant funds may be used to provide:

(1) Counseling, job development services and job follow-up support for women interested in entering non-traditional occupations;

(2) Counseling designed to help women entering or enrolled in programs non-traditional for their sex overcome difficulties encountered in those programs;

(3) Supportive services to help students adjust to new employment requirements;

(4) Job development services to provide women with information on opportunities in non-traditional jobs, and

(5) Programs to introduce women to non-traditional job settings or to persons employed in non-traditional jobs.

Support services funds also may be used to increase the number of women teaching non-traditional occupations to provide supportive examples for other women.

Basic Grant money can be used to establish day care programs for infants, pre-school and school-age children "in order to afford students who are parents the opportunity to participate in vocational education programs."

In addition to the programs and services mentioned above, Basic Grant funds are available for Energy Education, Stipends, for students who have acute economic needs that cannot be met by work study, and Placement Services. Basic Grant money may be used for Construction of area vocational

schools as long as the State or local educational agency does not select a site which limits access based on race, color or national origin.

The second largest category of state formula grants is for Program Improvement and Supportive Services. These funds may be used for state and local administration and program improvement.

This section provides for the improvement of vocational education through research, exemplary and innovative programs, and curriculum development. The programs are operated either directly by a research coordinating unit (RCU) which the state must establish in order to spend the funds, or they are conducted under contracts awarded by the RCU.

The state is required to include in its five-year and annual plans a comprehensive plan of program improvement which describes how it will use Federal funds, its priorities, and how it will disseminate results. (Applicants for funds must demonstrate a "reasonable probability" that the project will result in improved teaching techniques or curriculum materials that will be used in a substantial number of classrooms or programs within five years.) The RCU must file an abstract of each approved project with the Department of Education and its National Center for Education Statistics within 30 days after its approval. Within three months of the project's completion, a final report must be filed.

At least 20 percent of a state's Program Improvement and Supportive Services funds must be used to support improved guidance and counseling programs. Programs which may be funded include:

(1) Training designed to acquaint guidance counselors with the changing work patterns of women, with ways of overcoming occupational sex stereotyping, and with ways of assisting girls and women in selecting careers based solely on their occupational needs and interests;

(2) Development of career counseling materials free of sex stereotyping;

(3) Establishment of vocational resource centers to meet the special needs of out-of-school individuals, including persons seeking second careers or entering the job market late in life, handicapped persons, persons from economically depressed areas, and early retirees.

The purpose of the Vocational Education Personnel Training section of the Act is to improve the qualifications of those serving or preparing to serve as vocational education teachers, administrators, supervisors, and guidance and counseling personnel. It authorizes the use of VEA funds for training to improve the quality of instruction, supervision, and administration of vocational education programs for the disadvantaged, the handicapped and the limited English-speaking, and to overcome sex bias and sex stereotyping. Trainees may receive stipends.

Congress provided up to 100 percent of the cost of special programs for academically and economically disadvantaged persons in areas with high concentrations of dropouts or high rates of youth unemployment.

In 1980, the Federal allotment for consumer and homemaking education was $43.5 million, and states were required to match every federal dollar with at least one state or local dollar. At least one-third of the Federal funds under this subpart and matching funds must go to programs in economically depressed areas or communities with high unemployment to assist consumers and to help improve home environments and the quality of family life.

Federal and state matching funds may be used only to support consumer and homemaking programs which:

(1) Encourage both males and females to prepare for combining the roles of homemaker and wage earner;

(2) Promote the development of curriculum materials which deal with the changing career patterns of men and women and federal and state laws relating to equal opportunity in education and employment;

(3) Give greater consideration to economic, social, and cultural conditions and needs, especially in economically depressed areas, and to bilingual instruction;

(4) Encourage local educational agencies to operate outreach programs in communities for youth and adults, giving consideration to special needs of the aged, young children, school-age parents, single parents, handicapped persons, and educationally disadvantaged persons;

(5) Prepare males and females who have entered, or are preparing to enter, work in the home.

Perhaps the most significant provisions of the Vocational Educational Act are those governing fund distribution. Congress provided specific directives to the states in VEA Section 106(4)(A) and (B).

Section 106(5)(A) might best be viewed as the criteria for ranking applicants. In considering the approval of applications for funds, the state is directed to give priority to applicants which are located in economically depressed areas and areas with high rates of unemployment and which are unable to meet their vocational education needs without federal assistance. Priority must also be given to programs which are new to the area to be served and which are designed to meet new and emerging manpower needs and job opportunities.

Section 106(5)(B) sets forth the criteria for determining the amount of funds to be allocated to those applicants approved for funding. Fund distribution is to be based on economic, social and demographic factors related to the need for vocational education among the various populations and areas of the state. In making the determination, the state must use as the two most important factors:

1. In the case of local school districts or area vocational-technical schools: the relative financial ability of a district to provide the resources necessary to meet its vocational education needs and the relative number of concentration of low-income families within the district.

2. For state-operated or state-authorized postsecondary institutions: the relative financial ability of the institution to initiate or maintain vocational education programs and the relative number or concentration of students it serves whose education imposes higher than average costs, such as handicapped students, students from low-income families and students from families in which English is not the dominant language.

The state's allocation scheme cannot be based solely on per capita enrollment or matching of local expenditures on a uniform percentage basis. The state cannot deny funds to a school which is making a reasonable tax effort solely because the school is unable to pay the non-federal share of the new program. Finally, federal funds are to be used to supplement and under no circumstances to supplant state or local funds.

C. MISSOURI'S ADMINISTRATIVE STRUCTURE.

VEA Section 104 requires each state to establish or designate the State Educational Agency (SEA) which will be the sole state agency responsible for the administration of the program authorized by the Act. Missouri has designated the State Board of Education, hereinafter referred to as the State Board, as the SEA responsible for the administration of the state's vocational educational education programs. The executive officer of the State Board is the Commissioner of Education.[13]

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13. RSMo, 1969, Section 161.112, p. 17 (Public School Laws of Missouri)

Missouri has approximately 554 public school districts and 59 designated area vocational schools. With the exceptions of Jefferson College, Crowder College and State Fair Community College, all other area vocational schools are housed under the administrative control of a school district and serves from 2-9 other secondary districts for vocational education programs of the more expensive variety. The State has not been divided into absolute planning and sending districts for the designated "host" school district. While the instructional programs at the area schools are primarily secondary, some adult programs are offered in both comprehensive high schools and area vocational schools. Since the definitional change required in the technical amendments of 1977 for postsecondary education which requires that only courses which offer college credit be termed postsecondary, changed the counting system; many enrollees formerly referred to as postsecondary (since they were enrolled in post high school courses) now had to be counted as adult enrollments. Missouri has ten junior colleges with fifteen campuses delivering some postsecondary vocational programs. Two State colleges, five State universities, and certain campuses of the University of Missouri system also offer some vocational education.

In 1980, Missouri reported vocational enrollments of 255,835. A breakout is shown in the following chart.

VOCATIONAL ENROLLMENTS - 1980

Secondary	157,270	Adult	69,948
Postsecondary	28,617	TOTAL	255,835

PROGRAMS - 1980

Agriculture	22,323	Trade/Industrial	50,598
Cons. Home Economics	86,791	Health	16,060
Occ. Home Economics	7,682	Technical	7,323
Business/Office	33,010	Special Programs	16,383
Distributive	15,665	TOTAL	255,835

An estimate of the vocational funds needed for all purposes for FY'81 was shown by the career and adult division to be $111,406,000. State and local funds will overmatch federal funds nearly 6 to 1.[14]

D. METHODS USED BY MISSOURI TO DISTRIBUTE FUNDS.

State and federal funds are distributed differently in Missouri. It has long been the contention of the career and adult division that local education agencies (LEA's) need to know with some assurance the approximate amount of vocational monies they could expect to receive during the planning cycle. This would establish a minimum for the LEA to plan programs. This money would come from State funds since federal funds cannot be allocated on a uniform percentage ratio throughout the State. The minimum to be allotted annually shall be determined by the number of State dollars and the number of programs. This practice has led some local districts to refer to the distribution of federal funds through formulae as "bonus" funds.

After the passage of the '76 amendments, a formula was developed (and accepted by USOE) and used until early 1980 when a Management Evaluation for Compliance and Quality (MERC-Q) found Missouri to be out of compliance with federal law and require an immediate change and development of different formulae for the distribution of federal funds. Immediate meant that the formulae to be used must be acceptable to the office of vocational and adult education before approval for FY'81 would be given.

This paper then will deal with the distribution and effects of the new formulae as proposed and accepted in the '81 State Plan for Vocational Education. The formulas used will be explored in some detail as to whether they have "face" validity and whether they will indeed distribute monies in the mode that was intended in the federal law and regulation cited in the introduction.

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14. 1981 Missouri State Plan for Vocational Education, p. 11

CHAPTER III

INFORMATION ABOUT THE FORMULAE

A. DISTRIBUTION OF STATE FUNDS

State funds are used to support instructional salaries of vocational teachers. The reimbursement rate varies by type of institution. If the approved vocational program is offered in a general or comprehensive high school, for each full-time secondary teacher, $300 per month of program operation will be paid. In an area vocational schools, secondary salaries will be paid at up to 50% of the salary, excluding benefits.

Up to 75 percent of salary shall be the rate for non-credit vocational courses taught at the adult level. If federal funds are used, formula factors shall apply. At the postsecondary level, for credit courses, State payments will be based on semester hours. Federal funds will be made also based on the formula factors. However, the combined reimbursement will not exceed 40% of the reported salary cost.

Instructional equipment will be paid from State funds for 50% of the approved items. The total request must be over $100 and no item less than $25. Supplies are not reimbursed.

Mileage may be reimbursed up to 50% of expenditure with a maximum of $300 for approved instructors and coordinators. Travel to State sponsored meetings may be reimbursed at a set rate determined by the Department of Elementary and Secondary Education. This travel requires prior approval.

Contracted services monies are paid at the rate of $65.00 per student per semester to those districts who send students to area vocational schools. This money helps to defray part of the cost of tuition.

Local administrator costs will be reimbursed up to 50% of applicable salary with a maximum of $8,000 annually. Supervisory administration costs will be reimbursed up to 50% of applicable salary with a maximum of $7,000 annually. These administrative costs shall be paid with half of the funds coming from the State and the other half from federal VEA money.

These are the factors which establish a minimum base for local districts. It should be pointed out that since teachers salaries are included and the State has no control over how much of an increase will be given annually by various local boards across the State, the percentage does not always equal 50% at the area school secondary level nor does it always reach 75% for the adult level. The rate is determined annually by utilizing the dollars provided in the State appropriation. During the present year, for example, the secondary reimbursement rate on salaries is approximately 42%.

B. THE MECHANISM FOR DISTRIBUTING FEDERAL FUNDS IN MISSOURI

Missouri determines the distribution of federal vocational education funds by the formula method and the project method. Some projects, however, also use a formula to determine the amount of funds to be allocated, notably the disadvantaged and handicapped program.

All formulae must use as the two most important factors the relative ability to pay and the concentrations of low income families. These, two factors outweigh all others in the formulae. The formulae also gives recognition for economically depressed areas and makes provision for rewarding new programs which meet emerging manpower needs.

Missouri has developed three separate formulae for distribution of regular program funds - one for secondary schools, one for junior colleges and one for senior colleges and universities. This is necessary because the data used does not apply to the different types of institutions. Any other eligible recipient would have to apply for special funding - through disadvantaged and

handicapped, sex equity, research RFP's, etc. A summary of the factors is included in the appendix.

All factors used in subheading 'A' are only for secondary programs 'B' factors are used only for junior colleges, and 'C'; factors are used only for senior colleges and universities.

Factor Y_1, represents the relative ability to pay in all three formulas. Factor Y_2 is an indicator of low income families. The Y_3 factor in formula 'A' reflects the concentration of low income families. In formula 'B', it is the best available indicator of low income families and in formula 'C' it is an indicator of depressed areas. The Y_4 factors in both 'A' and 'B' indicate values of depressed areas. It should be noted that formulae 'A' and 'B' utilize four factors while formula 'C' utilizes only three factors due to availability of proxy data.

The computation of the formulae is outlined in the appendix and is self explanatory. It should be noted that after the various factors have been computed of each LEA, they are converted into Z scores and then converted factor Y_2 and converted factor Y_4 are multiplied by .9 to diminish their effect somewhat in the overall formula. For formula 'C' which only has 3 factors the converted factor Y_3 is so treated. Standard scores are then computed and this is converted into a T score to eliminate negative numbers. This T score is referred to as the LEA Standard Rate. The standard rate is then used to compute what is called an LEA percent. This is done mathematically by multiplying the LEA standard rate by the LEA State reimbursement amount. This product is called the 'LEA Product'. Each LEA product is then divided by the total of all LEA products multiplied by 100 and yields the LEA percent. Finally, the LEA percent is multiplied by the available federal funds to be distributed. This yields the LEA's amount of funding from these formulae.

It is of importance to note again that the LEA product is determined by multiplying the standard rate as previously defined by the LEA State Reimbursement Amount. This will be discussed further in the conclusions.

Since guidance and consumer homemaking do not receive State reimbursements, a substitute for the LEA product had to be found for those districts having these programs. This substitution is basically to replace the LEA State reimbursement amount with the actual LEA expenditure for salaries in each area and then find the product. This is a significant change, however. Further, for new programs, the final computation would be the LEA percent x the amount of money in the new programs fund.

C. POINT SYSTEM FOR TARGET POPULATIONS.

Special project formulae have been devised for co-op program funding, disadvantaged and handicapped projects, and work-study funding. These all involve a point system. They are similar in many respects. A chart depicting the differences is included in the appendix to this report. The point system for these three programs is identical. The LEA Y_1, factor from the general formula is computed as described previously. This factor is then positioned on a scale which yields a percent awarded to each LEA. The same is true for LEA Y_3 in all areas. The scale is:

LEA Y_1 or Y_3 Values		Percent Awarded
-	.0	11%
+	.0	12%
+	.1	13%
+	.2	14%
+	.3	15%
+	.4	16%
+	.5	17%
+	.6	18%
+	.7	19%
+	.8	20%
+	.9	21%
+	1.0	22%

Then the various items, as given in the special formula, produce certain specified percentages. These can be recorded for inclusion in the total score. All other items should be self explanatory as to the points awarded, etc.

The scores, once tabulated, yield a percentage. Up to 100% funding for displaced homemaker projects can be provided. This is also true for disadvantaged and handicapped projects. The highes percent of payment for work study is 80.

After application has been made, and the project approved, the point spread for each district can be computed. The minimum number of points (percentage) would yield 49% for disadvantaged and handicapped programs, 42% for work study; and 45% for displaced homemaker. These percentages are then multiplied by the amount of money allocated.

D. RANKING PROCEUDURES FOR TARGET POPULATIONS.

No formal ranking is done during the computation of the formulas which are appropriate for the distribution of federal funds as was done prior to the adoption of the revision of formula previously used. However, as previously mentioned, the State shall give priority to local applications as per the law, from economically depressed areas and areas of high unemployment and unable to provide the necessary resources. Further, priority must also be given to local applicants proposing programs to meet new and emerging manpower needs.[15] By the assignment of points as described previously, due attention is paid to these factors allowing for those districts having the required priorities to come to the top of the distribution process in terms of dollars allocated. This, then, is the ranking process without actually assigning a rank of 1, 2, 3, etc. A comparison of the three special target formulae used is depicted in the appendix.

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15. P.L. 94-482. op. cit. Section 106(5)(A)

CHAPTER IV

DISTRIBUTION OF FUNDS TO ELIGIBLE RECIPIENTS

"Any distribution system must have an appropriate control against which formula factors can be applied. Stated another way, the formula factors must undergo a process through which factor values can be converted to dollars in a controlled manner. The control mechanism used in the Missouri distribution process is the amount of State vocational funds granted to an LEA. The State reimbursement amounts utilized in the formula computation reflect only the standard amounts reimbursed for teacher salaries. Since reimbursement rates from State funds are uniform for full and part-time teachers in all LEAs the control mechanism is now in place. This method measures the size and commitment of an LEA's vocational program."[16]

This is perhaps the single most important process undertaken during the computation of the formulae used in the distribution of federal funds for regular programs at the secondary, postsecondary or adult level. A similar control mechanism is employed for the distribution of guidance funds and consumer and homemaking funds in comprehensive high schools. This is step 5 as defined in the computation of the formula. (See Appendix.)

It is explained further by noting that all of the factors employed to satisfy the intent of federal law are subject to the overriding multiplier of the amount of State vocational funds granted to an eligible recipient on the basis of a minimum guarantee as previously noted.

The State Plan (1981) shows four examples of how this process works for secondary funding. It appears that the relative ability to pay and the low income families factors do have the greatest values as required by law.

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16. 1981 Missouri State Plan. op. cit. p. 75f

In an attempt to briefly analyze some of the data used for distribution of federal funds both from the formula used prior to the required revision (before MERC-Q) and the formula now in use, a co-efficient of correlation between the monies allocated to secondary districts from State funds and the distribution on the basis of formula factors yielded a Pearson r of .98.[17]

Using the revised formula, as accepted by the U.S. Department of Education, the correlation between State and Federal distributions using a random sampling of 25% (115 districts) of all secondary level eligible recipients yielded a Pearson r of .83. All districts were assigned a number and a table of random numbers was used for the selection of districts to be included in the sample. These correlations were computed to attempt to define how close the Federal and State distribution resembled each other since the purpose of State reimbursements has largely been to maintain the on-going programs of vocational education through teacher salary subsides, while the Federal distribution was designed to reward district implementing programs were relative ability to pay and low income families were the main considerations.

A. AN ARRAY OF FUNDING TO ELIGIBLE RECIPIENTS.

An interesting display of how funds are distributed according to whether they are State or Federal is shown below. The chart gives the range of reimbursements of State secondary funds for various authorized categories, and also the range of distributing Federal secondary funds by the various formulae as revised.[18]

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17. Unpublished data Missouri Advisory Council on Vocational Education, 1981.
18. Measures of Participation in Vocational Education; Enrollments, Students, and Exposure. 1980. p. 1.

RANGE FOR REIMBURSEMENT OF STATE FUNDS

Regular Secondary	Adult	Regular Placement
$56 - $1,328,066	$26 - $814,622	$52 - $24,000
Local Administration	**Other**	**Total**
$9 - $57,289	$441 - $3,200,000	$56 - $3,201,661

444 districts received one or more of these types of State reimbursements

RANGE FOR FEDERAL FUNDS TO BE DISTRIBUTED

Regular Secondary	Consumer Home Econ	Guidance	Coop
$141 - $483,498	$436 - $92,820	$96 - $133,165	$74 - $27,262
Disadvantaged & Handicapped	**Work Study**	**Total**	
$228 - $809,130	$45 - $4,372	$147 - $1,198,421	

407 districts received federal dollars for payments of approved expenditures as noted.

While these federal expenditures are <u>not</u> reimbursements, they can only be expended for approved items submitted on an FV - 2 Special Formula Form. This allows the State to prevent unauthorized expenditures under federal law.

B. CONCLUSIONS ABOUT THE DISTRIBUTION OF FEDERAL FUNDS.

From the findings reported, it is obvious that the controlling factor of funds comes from computation 5 in the process. Since this is the State reimbursement which is based on teacher's salary (on the whole) it would therefore give additional funding to area vocational schools over comprehensive high schools. This, of course, is due to the way State funds are allocated to the two types of institutions. Since the correlation is still .83 for the revised formula, the question arises as to whether the spread is as great as it "should" be as prescribed in law. It appears that this is a relative question -- relative to the approval of the U.S. Department of Education. Some alternatives to explore would include the

expenditures, as used in the guidance and consumer home economics formulas for all distributions. Another possibility would be to use the controlling factor of population served. This would be a good alternative, from outward appearances, if reliability of reported information could be ascertained. It has been shown that these reported enrollments (and completions) are not valid nationally,[19] and there is no reason to believe that Missouri data is any better. Not-with-standing the data problem which could be improved, it may be more valid to disburse monies on enrollment bases since some instructors have as few as 10 in a class and others may have as many as 24-30. However, it could also be argued that on the basis of accessibility, the offering should still be made for the small class. It does appear, however, that the formula should discriminate in the amount allocated.

Another conclusion is that the entire distribution of federal funds, aside from the prescribed set-aside is arbitrary. That is, the State Department of Education can and does determine how much money to put into the funding procedures for secondary, postsecondary, adult and the targeted population programs. This being the case, a real argument could and should be made by any group who does not agree that secondary vocational education is a priority. Further, that above the set-aside, perhaps, money allocated to guidance or work study should be cut back and put into regular programs.

Topics for further study would include not only more in-depth discussions of the premises cited above, but also a factor analysis of the defined factors Y_1 through Y_4. It appears that several of these factors do not discriminate or at least not enough to add the burden of data collection as presently demanded.

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19. Measures of Participation in Vocational Education: Enrollments, Students, and Exposure. 1980. p. 1.

One last topic for further study would be resolve the question as to whether the variables used in the ratios for the various factors truly distribute themselves in a normal fashion. This question was motivated when a scatter plot was made of each numerator and denominator in the formula. Without applying mathematical rigor to the process of smoothing out the histograms, it appears at least that many of the distributions are not normal which would nullify the use of the Z score and T score. Since time has not permitted the full analysis of this premise, the hypothesis that it is not normal remains a viable topic for further discussion.

CHAPTER V

TOWARD A BETTER UNDERSTANDING -- VEA FUNDS DISTRIBUTION

The Vocational Education Act provides a grant-in-aid to Missouri and other states upon submission to the federal government a general application, program plans and an accountability report. The amount of the grant is calculated on the basis of population and income ratios.

The provisions governing the distribution of funds within states were modified considerably in 1976. The two most important factors in determining the distribution of federal funds to eligible recipients are now to be:

1. the relative financial ability of such agencies to provide the resources necessary to meet the need for vocational education in the areas they service (RAP = the relative ability to pay), and
2. the relative number or concentration of low-income families or individuals within such agencies. (LIF = low income families)

The monies in Missouri are distributed to eligible recipients based upon whether they are serving secondary or postsecondary students in vocational education. Two types of agencies serve the postsecondary population. They are the junior college districts and the four-year colleges or universities. Since the geographic boundaries for these three suppliers are not co-terminous, three separate formulas are necessary to the distribution process -- one for secondary institutions, one for junior colleges, and one for the four-year colleges or universities.

The Department has designated all institutions as local educational agencies, referred to as LEA's. For purposes of simplification and understanding, it will prove helpful to consider only the secondary formula at this time.

There are 4 factors in the secondary formula. They are Y_1, Y_2, Y_3 and Y_4.

Y_1 is defined as the LEA's relative ability to pay (RAP) for programs and services

Y_2 is defined as an indicator of low income families (LIF)

Y_3 reflects the concentration of low income families (LIF)

Y_4 is defined as indicating values for depressed areas

A value for each of these factors is found by substituting proxy data as described:

	DATA SOURCE
$Y_1 = \frac{\text{District Levy x District Valuation}}{\text{District ADA}}$	DESE, School Data Section
$Y_2 = \frac{\text{State Average Family Income}}{\text{(Mean of) Co. Average Family Income}}$	U.S. Dept. of Commerce, Census Data
$Y_3 = \frac{\text{District Number of Students-AFDC}}{\text{District Enrollment, Grades K-12}}$	MO Dept. of Social Svs and DESE, School Data Sec.
$Y_4 = \frac{\text{County Average Unemployment}}{\text{State Average Unemployment}}$	Mo. Division of Employment Security

It would be a convenient matter to add all of the factors together to give some sort of a score to be converted to a percent and then used to calculate an amount of money to be allocated to each LEA. However, one cannot add apples and oranges so some conversion is necessary for each of the factors to make them additive. This is accomplished by employing the statistical conversion to standard scores. Before adding the standard scores together, however, the standard score values for factor Y_2 and Y_4 should be multiplied by .9. This diminishes the value assigned to these factors by .1. This is considered necessary since the data used for computing the values for each of them is data for county and state, rather than school district data as can be used in computing values for Y_1 and Y_3. Negative numbers can be eliminated from the array of standard scores by multiplying by 10 and adding 50 to each score. Each LEA is now represented by a positive standard score.

This score is then multiplied by the controlling factor in the distribution process -- the amount of money it has been allocated for reimbursement from State funds. This yields a new array of numbers for each LEA. One can take the value for any LEA from the last array, divide it by the sum of all the numbers in that array and multiply that decimal by the total amount of federal funds to be distributed and arrive at the amount of money they are to receive.

In addition to this distribution of federal funds for those institutions offering vocational education courses, eligible recipients can also qualify for additional funding if they have programs for displaced homemakers, guidance, disadvantaged and handicapped, work study, consumer and homemaking, and programs for new and emerging occupations. These programs also employ a formula similar to that explained for regular secondary programs.

CHAPTER VI

METHODOLOGY AND FINDINGS

A distribution based upon data supplied by the Department of Elementary and Secondary Education was compiled for secondary schools using $3,000,000 as the total amount to be distributed. This is the amount the State has been alloting for secondary programs for some time. A complete computer printout of the data input and output is included in the appendix. The computations as specified in the formula taken from the Missouri State Plan for Vocational Education for the 356 agencies offering secondary programs were completed and are arrayed in the appendix.

The mean and standard deviations were computed for Y_1, Y_2, Y_3 and Y_4. The results were:

	MEAN	STD. DEVIATION	NO.
Y_1	65.45716657	36.36004054	356
Y_2	1.32159466	0.29377513	356
Y_3	0.05430337	0.04653180	356
Y_4	0.84612584	0.32716919	356

The mean for the LEA adjusted score for ZY_0 was 0.00000000 and the standard deviation was 1.64608939.

An analysis was completed computing the mean, standard deviation, variance, standard error of the mean, skewness and kurtosis. This methodology was completed in order that a "goodness of fit" test could be conducted to determine the normality of the distributions of the most important components of the factors used in distributing funds. It was found that all distributions were skewed, but that the tax levy was more nearly "normal" than any other variable, but this distribution was leptokurtic (excessively) when compared to a normal distribution.

A Pearson r was computed correlating all of the variables with each other so that a regression analysis could be performed comparing (statistically) the distribution effected and selected variables used in the computations. This was done to determine which variables contributed most to the variance in the distribution of funds. It was found that the best one variable model found would be the component AFDC (aid to families of dependent children). This accounted for 81% of the variance. The best two variable model was one which included AFDC and State reimbursements. This accounted for 97% of the variance. Some extremely slight accountability of variance was added when county average income was also considered, but the explained variance was still 97.5%. When average daily attendance (ADA) was also considered, it was found that 98% of the variance can be explained. Clearly AFDC and the State reimbursement appear to be the most powerful determiners of funding. A slightly stronger and therefore the best four variable model for explaining the variance in the distribution is found (again explaining 98%) when the enrollment (K-12) is used along with average daily attendance, aid to families of dependent children and State reimbursements.

CHAPTER VII

CONCLUSIONS

From the findings, it is evident that the distributions of the components of the factors used in determining the distribution of federal funds by the formula used for secondary schools in Missouri are not "normal." All component distributions are skewed and none are mesokurtic. This, however, does not appear to be a deterrent in the correct usage of standard scores which are used to effect arithmetic computations to various factors employed in the formula. It does still appear, however, that a formula which would utilize all the "necessary" components and would be "sufficient" to satisfy the requirements of law could be determined that would be simpler and more easily understood by the eligible recipients and anyone studying the issue.

While the law requires that two factors - the relative ability to pay (RAP) and the concentration of low income families (LIF) - must receive a high priority in the distribution of federal funds, it is noted that in the Missouri formula, the two factors which largely determine the variance includes AFDC which is a determinant of low income families and also the State reimbursement made on the basis of teacher salary and approved equipment and travel reimbursement. Since State reimbursement is not a component of the formula, but rather a standard with which to control the federal funding, it is concluded that low income families is adequately provided for as shown by the variance in the regression equations. However, it is also noted that the relative ability to pay makes very little (.2 of 1%) difference in the allocation of federal funds and then only accounts for the use of average daily attendance. It is only when seven variables are included in the formula (this would include the levy and valuation) that an

entire factor dealing with relative ability to pay (RAP) is utilized and at this point only 98.1% of the total variance is accounted for in regression analysis. This includes expenditures. If expenditures are included in the regression analysis, one must utilize nine variables in order to pick up both components of the numerator of Y_1 and then the variance explained reaches only 98.3%. It is evident that little is gained by these computations, other than to say that the components have been included and relative ability to pay has received attention, but not to the extent necessary.

CHAPTER VIII

COMMENDATION AND RECOMMENDATIONS

COMMENDATION

•The Career and Adult Division of the Department of Elementary and Secondary Education is commended for the development and implementation of a formula approved by the United States Department of Education upon extremely short notice following the MERC-Q.

RECOMMENDATIONS

•A formula which includes all the mandatory factors required by law but that would be more easily understood should be developed for the distribution of federal funds.

•If the present formula is kept, it is not necessary to go through all of the manipulations to change to standard scores and the present formula could be simplified by eliminating at least one of these calculations without a change in the final distribution array.

•The amount of money to be distributed to each level (and other required programs) should be specified to all agencies with the rationale for the determination of these amounts so that a fruitful discussion of priorities could be held during the public hearings conducted by SDESE each year.

•Further study should be devoted to whether or not State reimbursement should be the controlling factor (indeed, if it is necessary) since this overrides every component except AFDC in the formula.

•A rethinking of the use of the constant .9 should be accomplished. (It does not appear that these diminished factors make any appreciable difference.)

•All other formulae used should be reviewed in light of the findings of this study.

FEDERAL VOCATIONAL FORMULA

I. THE FORMULAE FACTORS

A. There are four factors included for the secondary formula as follow:

$$Y_1 = \frac{\text{District Levy x District Valuation}}{\text{District Average Daily Attendance (ADA), K-12}}$$

$$Y_2 = \frac{\text{State Average Family Income}}{\text{County Average Family Income}}$$

$$Y_3 = \frac{\text{District Number of Students-Aid to Families of Dependent Children (AFDC)}}{\text{District Enrollment, Grades K-12}}$$

$$Y_4 = \frac{\text{County Average Unemployment}}{\text{State Average Unemployment}}$$

B. There are four factors in the formula to distribute funds to junior colleges as follow:

$$Y_1 = \frac{\text{District Levy x District Valuation}}{\text{Institutional Full-Time Equivalency of Students}}$$

$$Y_2 = \frac{\text{State Average Family Income}}{\text{Mean of County Average Family Income}}$$

$$Y_3 = \frac{\text{Mean of Percent of County Households Under \$3,000}}{\text{Average Percent of State Households Under \$3,000}}$$

$$Y_4 = \frac{\text{Mean of County Average Unemployment Rate}}{\text{State Average Unemployment Rate}}$$

C. Three factors will be utilized in the formula to distribute funds to senior colleges or universities as follow:

$$Y_1 = \frac{\text{Institution's State Appropriation}}{\text{Institution's Full-Time Equivalency of Students}}$$

$$Y_2 = \frac{\text{Mean of Percent of County Households Under \$3,000}}{\text{Average Percent of State Households Under \$3,000}}$$

$$Y_3 = \frac{\text{Mean of County Percent Average Unemployment Rate}}{\text{State Average Unemployment Rate}}$$

II. COMPUTATION OF THE FORMULA

Values for factors in formulae 'A', 'B', and 'C' will be computed in an identical manner, though formula 'C' has one less variable. The computational steps of formula 'A' below will serve as an illustration.

$$\text{Let } Y_1 = \frac{\text{District Levy x District Valuation}}{\text{District ADA}}$$

$$\text{Let } Y_2 = \frac{\text{State Average Family Income}}{\text{County Average Family Income}}$$

$$\text{Let } Y_3 = \frac{\text{District AFDC}}{\text{District Enrollment, Grades K-12}}$$

$$\text{Let } Y_4 = \frac{\text{County Average Unemployment}}{\text{State Average Unemployment}}$$

(1) By LEA, the values of factors Y_1, Y_2, Y_3, and Y_4 are obtained. Compute the mean and standard deviation for all LEAs for each set of values. Each set of Y values is converted to "Z" scores and the multiplier of .9 is applied to the Y_2 and Y_4 values. The computation of "Z" scores is:

$$s = \sqrt{\sum \frac{(Y - \overline{Y})^2}{N}} \quad \text{AND} \quad Z = \frac{Y - \overline{Y}}{s}$$

(2) Compute an LEA adjusted score.
LEA Adjusted Score or $ZY_o = ZY_1 + (ZY_2 \times .9) + ZY_3 + (ZY_4 \times .9)$

(3) Compute Standard Scores from each LEA adjusted score.

$$s = \sqrt{\sum \frac{(ZY - \overline{ZY})^2}{N}}$$

AND

$$\text{LEA Standard Score or } Z_o = \frac{ZY_o - \overline{ZY}_o}{N}$$

(4) Compute the LEA Standard Rate.
LEA Standard Rate = $Z_o \times 10 + 50$ (This computation eliminates negative numbers in the array of values.

(5) Compute the LEA Percent.
(a) LEA Standard Rate x LEA State Reimbursement Amt = LEA Product
(b) Sum the Products for all LEAs. Compute the LEA Percent.

$$\text{LEA Percent} = \frac{\text{LEA Product}}{\text{Total LEA Products}} \times 100$$

(6) Compute the LEA Distribution Amount.
LEA Percent x Available Federal Funds to be Distributed.

SPECIAL FORMULAE COMPARISON

Displaced Homemakers and Other Special Groups, Support Services for Women, and Day Care Svs.	Disadvantaged and Handicapped Programs	Work-Study Program
1. LEA Y_1 factor value (Federal Vocational Formula) on a scale as follows: LEA Y_1 Values — Percent Awarded - .0 — 11% + .0 — 12% + .1 — 13% + .2 — 14% + .3 — 15% + .4 — 16% + .5 — 17% + .6 — 18% + .7 — 19% + .8 — 20% + .9 — 21% +1.0 — 22% 11%-22% _____	1. LEA Y_1 factor value (Federal Vocational Formula) on a scale as follows: LEA Y_1 Values — Percent Awarded - .0 — 11% + .0 — 12% + .1 — 13% + .2 — 14% + .3 — 15% + .4 — 16% + .5 — 17% + .6 — 18% + .7 — 19% + .8 — 20% + .9 — 21% +1.0 — 22% 11%-22% _____	1. LEA Y_1 factor value (Federal Vocational Formula) on a scale as follows: LEA Y_1 Values — Percent Awarded - .0 — 11% + .0 — 12% + .1 — 13% + .2 — 14% + .3 — 15% + .4 — 16% + .5 — 17% + .6 — 18% + .7 — 19% + .8 — 20% + .9 — 21% +1.0 — 22% 11%-22% _____
2. LEA Y_2 factor value (Federal Vocational Formula) on a scale identical to 1. above. 11%-22% _____	2. LEA Y_2 factor value (Federal Vocational Formula) on a scale identical to 1. above. 11%-22% _____	2. LEA Y_2 factor value (Federal Vocational Formula) on a scale identical to 1. above. 11%-22% _____
3. Program new to the LEA service area. Bonus Points New Program - 10% Expanding Program - 8% Ongoing program - 7% 10% _____	3. Program new to the LEA service area. Bonus Points New Program - 10% Expanding Program - 8% Ongoing Program - 7% 10% _____	3. Program new to the LEA service area. Bonus Points New Program - 10% Expanding Program - 8% No supervisory salaries allowed 10% _____
4. LEA county or multi-county unemployment, state mean or above - 4.5 = 5%; 3 = 4%; 2 = 3%; 1 = 2% 5% _____	4. LEA county or multi-county unemployment, state mean or above - 4.5 = 5%; 3 = 4%; 2 = 3%; 1 = 2% 5% _____	4. LEA county or multi-county unemployment, state mean or above - 4.5 = 5%; 3 = 4%; 2 = 3%; 1 = 2% 5% _____
5. LEA located in economically depressed area. 5% _____	5. LEA located in economically depressed area. 5% _____	5. LEA located in economically depressed area. 5% _____

6. LEA dropout rates – (a) state mean or greater-10% (b) below the state mean – 5% 10% _____	6. LEA droupout rates – (a) state mean or greater-10% (b) below the state mean – 5% 10% _____	6. LEA dropout rates – (a) state mean or greater-10% (b) below the state mean – 5% 10% _____
7. LEA percent of disadvantaged/handicapped population. Percentage rate: (a) state mean or greater-8% (b) below the state mean -5% 10% _____	7. LEA percent of disadvantaged/handicapped population. Percentage rate: (a) state mean or greater-8% (b) below the state mean -5% 10% _____	7. LEA percent of disadvantaged/handicapped population. Percentage rate: (a) state mean or greater-10% (b) below the state mean – 5% 10% _____
8. LEA existence of adult/postsecondary open entry-open exit instruction in the service area 10% _____	8. LEA educational justification to include the number of students to be served based on size intervals for the following types of program or services. Modified Skill Training 20-30 Vocational Resource Educator 15-35 Remediation 45-75 Vocational Preparation 20-30 Vocational Evaluation 60-100 Counseling 100-200 Approved projects receive a minimum point value of 4% with values scaled up to 8%. 8% _____	8. LEA county population, school years completed. (a) state mean or above – 5% (b) below state mean -10% 10% _____
9. LEA educational justification to include number of clients to be served. (a) 100-300 – 4% (b) 301-Up – 4% Values scaled up to 8% 8% _____	9. Budgeted expenditure per pupil (D&H) (a) above state mean for FY81-8% (b) below state mean for FY81-4% 8% _____	9. LEA educational justification to include number of students served based on ratio of grades 11 and 12 Values scaled up to 8% 8% _____ No supervisory salaries will be allowed.
10. County dissolution of marriage to include - Rank number of county dissolutions in top 20 counties, or - Rate of county dissolutions above 5% Values scaled up to 10% 10% _____	10. LEA project to mainstream disadvantaged/ handicapped students into regular vocational program 10% _____	
Total Score _____	Total Score _____	Total Score _____

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